09/863417

ABSTRACT

In this invention an optical gain element is used where a fraction of the optical output signal is passed through a periodic filter and fed back to the gain medium. This configuration simply forms a multi-wavelength ring laser. The optical gain element provides the gain medium for the laser and the filter forces the laser to lase on the predetermined wavelengths. The periodic filter can simply be an asymmetric Mach-Zehnder Interferometer (MZI). It is known that asymmetric MZIs have an almost sinusoidal wavelength response where its period is a function of the length difference of the arms of the asymmetric MZI. Therefore, channel spacing may be controlled by changing the arms length difference in an Asymmetric MZI.